

The Absorbent Mind

Introduction

There are pine trees in the western United States that make two different kinds of cones¹. The first kind functions in the usual way: at maturity the cone opens and the pine seeds hidden inside fall to the earth. Those that escape the hungry birds and squirrels lie in the soil until spring when the soil warms and if conditions are right, sprout into tiny pine trees. But summer is very dry in the west, and when forest fires rage through they destroy seed, sprout and mature tree alike. This would soon be the end of the forests, but for a tiny miracle. The second kind of pinecone does not open at maturity. These cones remain tightly closed, year after year, and their seeds are unaffected by the warm spring sunshine. These cones remain dormant and seemingly lifeless until the intense heat of the forest fire awakens the life inside the cone. Only then do the cones open, and the stored seeds are released in huge numbers to repopulate the burnt ground. In the devastating aftermath of the fire, these seeds, inert and overlooked, are the forest heroes.

Phenomena like this are all around us; but in order to recognize them we need knowledge of their existence, and a willingness to look. Perhaps the most extraordinary event of all exists right in front of us, but only recently has society begun to recognize the remarkable creative force that is the mind of the very young child; what Montessori called the **“Absorbent Mind.”** Often overlooked and insignificant, the power hidden inside the child’s mind is the “secret of childhood.” Within every child is a new hope, a potential for greatness. It is there for anyone with the willingness to look for it. Montessori wrote, ***“The child is neither feeble nor poor. The child is the father of humanity and of civilization; he is our teacher, even where his own education is concerned. This is not an extravagant exaltation of infancy; it is a great truth. It is difficult to discern a truth in a mass of facts; however, when we succeed in isolating it, its light fascinates us. It is precisely in the child that I have discovered a light of immense significance for all of humanity.”*** (Montessori, *The 1949 San Remo Lectures*, p. 21, AMI)

The first plane of development, birth to around age 6, is a period of profound importance. Although our experiences during the first plane shape the adults we become, we remember almost nothing of this time. Nature has given the small child unique, unconscious powers and abilities so that she can create the person she is to become. ***“This is not an extravagant exaltation of infancy, it is a great truth.”*** Understanding the nature of these unique powers

¹ Monterey pine and pond pines are two types that produce these “serotinous,” or closed, cones.

and abilities is essential to our work in guiding the child towards fulfilling her potential. The child will construct herself, *with* our love and support, or *without* it, but the results remain with her forever. When we understand the child's great work, our attitudes will change, and we will no longer look at the child as **"poor and feeble,"** but as a treasure waiting to reveal its riches to the future.

A newborn baby certainly doesn't look like a source of **"immense significance for all humanity."** Endearing as they are, human babies are helpless, weak creatures capable of almost nothing. Possessing only reflexes at birth, a baby cannot independently meet even the most of basic of her needs. She cannot rely on instinct or heredity to determine her path, but instead, is inert for a long time after birth. It is really quite amazing that this infant will one day possess an intelligence and independent life that surpasses all other animals.

Other newborn animals, on the contrary, are much more fully developed and ready to work to survive. The newborn calf has long legs and can stand soon after birth; it can even run after its mother when it wants to eat. The newborn monkey can cling to its mother's fur and hang on tightly while she swings from branch to branch. At birth, a kitten is already programmed for the life of a cat. It has the language of cats and can mew for its mother. It pounces and chases, practicing for the cat life of hunting and stalking. Instinct and heredity have given these animals almost everything they need to live their lives. (Montessori, *The Formation of Man*, "The Nebulae," p. 62-63, Kalakshetra)

Nor can we say that the baby simply must grow larger in order to fulfill its life's potential. When a snail hatches, it is a tiny version of the adult snail, and immediately begins the life of a snail. As it eats, it grows, changing only in size. Likewise, a sapling takes nutrients from the soil and increases in size until it is a fully mature tree. But a human baby does not grow in the same manner as a snail or a tree. A baby does not just increase in size over time to mature; instead, his very being qualitatively changes. This is the difference between growth and *development*.

The word "development", as it is used here, refers to growth directed towards the construction of a pre-existing potential. At the beginning, there is only the blueprint, or design for the construction. The design includes organizing principles that guide the development, but the design does not determine what the finished structure will look like, for this is determined through interaction with the environment. (M.Montessori Jr., *Education for Human Development*, p. 10) If we think of two houses, they can have the same basic blueprint- external walls, a roof, a front porch, doors, windows, etc. But each of you right now is imagining a

different image of a house. Although the basic design is the same, each building will be different, because each house can be constructed out of very different materials.

Another aspect the idea of development comes from a seed. Within a tiny seed there exists a potential and a design for a healthy plant. But a seed doesn't just grow larger to mature; it has to interact with its environment in order to develop its potential. If the seed finds life-supporting conditions of warmth, light, water, and nutrients, the seed will swell and sprout roots and leaves, and develop all of its healthy plant potential. But each seed can only develop into the one specific type of plant it was designed to be. A sunflower seed can never be a violet; the sunflower's blueprint will only ever lead to the life of a sunflower, as beautiful and wonderful as that may be.

Here again, this is where human beings are so profoundly unique. Human development is not locked within a fixed design, with one specialized way to move about, one particular type of food to nourish itself, or one region of the world in which to live. Human beings have an incredible ability to create a meaningful and happy life adapted to almost any environment and any condition. Every infant has the potential to develop and become a person of her own time and place. At birth, she is nothing, but at the same time, she is everything we can conceive of and she is a future that we can't even imagine. Each one of us is a miracle, by the very fact of our being.

Hidden within the mind of the tiny baby, there is a unique ability that no other living things possess, not even adult humans. At no other time in human life is this kind of development possible. Montessori writes, ***"It is evident that in him there acts a mind totally different from ours, and that therefore, a psychic functioning different from that of the conscious mind can exist in the unconscious."*** She describes a type of mind different from our conscious, reasoning, intelligent adult mind. ***"There exists in the small child an unconscious mental state, which is creative in nature."*** (Montessori, *The Formation of Man*, pp.70-71, Kalakshetra) This is the unique mental state of childhood that Montessori called the **"Absorbent Mind."** It is the absorbent mind that makes it possible for a helpless newborn to transform himself into the future of humanity.

Functions of the Absorbent Mind

With the power of the absorbent mind, the child accomplishes two essential creations. He actually builds or **constructs** all aspects of his intelligence and personality, and he completely **adapts** to the culture in which he lives. The child's absorbent mind takes in all of impressions in the environment and they become a part of him, and form him. This does not happen through

heredity or instinct, or simple growth, but is a result of the creative potential within the child. He does this work himself. Montessori writes, ***“The child is not an inert being who owes everything he can do to us, as if he were an empty vessel that we have to fill. No, it is the child who makes the man, and no man exists who was not made by the child who once he was.”*** (Montessori, *The Absorbent Mind*, p. 15, Kalakshetra)

Construction

To begin to understand this process, think about how a very young child acquires language. During the embryonic period in the womb, the necessary physical organs of speech are developed- the tongue, the lips, the ears, so that when the baby is born, she has the physical potential to speak. However, she is not born speaking a few words and needing only to increase her existing vocabulary. Nor does heredity guide her to speak any one, particular language. The child must both create the structure of her language and develop the control and coordination of movement necessary to produce sounds of her language.

As soon as the child is born, the absorbent mind assists her in taking in all of elements of the particular language in her environment. Special sensitivities within the child draw her attention to the sound of the human voice. She intently watches the mouth of the person speaking. She hears the particular sounds of her particular language with all the nuances and inflections, and she internalizes the gestures and body language that accompany the sounds. She absorbs the patterns and structure of her language. After a relatively short period of time, she begins to reproduce these sounds herself. What once *did not exist* is now present; this is obvious evidence of a mental construction. Because she speaks the language of her own people, she has adapted her construction of language to her present time, place and culture.

No one taught the child to speak her native language. The spoken words themselves are but the tip of an iceberg- evidence of a mental construction. She built up the neural pathways in the language areas of her brain, coordinated her nervous system for production of unique sounds, and abstracted an entire system for associating sounds with meaning. This is nothing short of astonishing. Think of it- if we were to attempt to teach a toddler all of the intricacies of articulation, pronunciation, grammar, syntax, vocabulary, inflection, the child would never learn to speak! And indeed, *could* never learn, for the very young child does not yet have the intention, concentration, or experience necessary to learn in the way we adults consider learning a language. And yet the small child does speak. Not only does she speak, she has completely internalized the totality of her language. This becomes her mother tongue, and never again will she learn a language so completely and so effortlessly.

These mental constructions, such as development of spoken language, show us the power of the absorbent mind. Montessori writes, ***“We must come to the conclusion that in the first two years of life there is psychic creation rather than growth. The creation of faculties, the creation of consciousness, everything is created during this period and afterwards nature perfects and enlarges that which has been created.”*** (Montessori, 1946 London Lecture #5, p.17) Likewise, if there is a defect or deficiency in what has been created, this too will remain with the child, for what is created through the absorbent mind becomes a part of the child forever.

Adaptation

The effortless and total acquisition of spoken language is one example of what we mean when we talk about how children “adapt” and become a person of their place and time. The child does not only develop intelligence and language, he creates his entire personality based on the particular conditions of the environment around him. Because of the absorbent mind, the child has a different relationship to the environment than adults do. Montessori uses the word ***“incarnate,”*** from the root word “carne” meaning flesh to describe this relationship. Carne- carnivore (flesh-eating) carnation (flesh-colored) and incarnate- “to make flesh.” The child incarnates the environment and forms himself from it. Sometimes the phrase, “embodied cognition” is used in current philosophy to describe a similar idea- the formative role of the environment in the development of cognition, or intelligence.

An adult “adapting” to a new environment is a completely different idea. Adults use previous experience and knowledge and apply it to new situations. It requires effort and some degree of difficulty for adults to adapt, and regardless of how positive the end result might be, it will never be as comfortable or familiar as “home.” Montessori writes, ***“Adults admire their environment, they can remember it and think about it; but the child absorbs it. The things he sees are not just remembered; they form part of his soul. He incarnates in himself all in the world about him that his eyes see and his ears hear.”*** (Montessori, *The Absorbent Mind*, “The Spiritual Embryo,” p.63, Kalakshetra)

But the child does not, and cannot adapt in the same manner as adults. The child has no previous experiences or knowledge on which to draw. Instead, his special psychological ability, his “absorbent mind,” enables him to involve all of his senses - sight, sound, smell, taste and touch- to absorb with love the customs, values, prejudices, speech, even eating habits, landscape, and climate, and incarnate these experiences into the adult he will become. (Montessori, *The Absorbent Mind*, “The Spiritual Embryo,” p.64, Kalakshetra) This is why our work with young children is so important. We cannot hope to change adults; our personalities

are already ingrained, but if we want to breath a new, better life into our future, we must turn to the children. We have the means to guide children's development, to guide their future towards peace and the progress of humanity.

The Camera Analogy²

In order to describe how the absorbent mind functions, Montessori compared the absorbent mind to a camera.³ In a single instant, a camera can take in everything in its field. For a camera, it is no more difficult to take a photograph of a group of people than it is to take a picture of just one person. A camera will take a picture of the "subject," but also include every other detail in the frame, including details we might be unaware of. When I take a picture of my children in front of a statue, I may not realize until I later look at the print that there were also strangers walking behind the statue, a dirty crumpled bag on the sidewalk, and two people kissing in the background. The camera is objective, like the absorbent mind of the child, and takes in every detail- good, bad, or indifferent.

Painting, on the other hand, much more subjective.⁴ The focus of the painting is of great importance in determining the accuracy of the representation. It is much more difficult to paint an entire group of people than just one person. The artist might decide to leave out certain details, or change them if his mood suggested it. The painter could never include all of the precise details that a camera could include. And while an artist is exhausted after a full day of painting, the camera is none the worse for wear after hundreds of photographs.

Before digital cameras, or when we use cameras with actual film, in order to obtain the image, the film has to be taken into a dark room and exposed to certain chemicals, which "fix" the image. Once the image is fixed it remains permanent. The absorbent mind acts in this manner. The images that the child takes in remain hidden in the darkness of the unconscious mind until the time when they are brought to light, or consciousness. Think again of our example of spoken language. The baby absorbed all of the language around him, unaware of the connections forming in his mind, until gradually he became conscious that this particular sound had this particular meaning.

² Montessori's camera analogy appears in *The Formation of Man* pp.72-73, *The Absorbent Mind*, pp. 114-115, and *The 1946 London Lectures*, Lecture #7, p. 28.

³ Montessori also gives the analogy of a sponge, to illustrate that a sponge will absorb any type of liquid with equal indifference; clean fresh water, or dirty used water. A sponge also must be primed, or dampened to begin to absorb liquid- a completely dry sponge doesn't take on liquid as easily.

⁴ Montessori continues the analogy by comparing the camera to a drawing in the *Formation of Man*, pp. 72-73, and *The Absorbent Mind*, pp. 114-115.

Characteristics of the Absorbent Mind

The camera analogy brings forth several characteristics of the absorbent mind. Like the camera, the child's absorbent mind takes in the **totality** of impressions. On my son Julian's fourth birthday, we set up a Pin the Tail on the Donkey game. Since he had never played the game, my husband showed him how to do it. Dave put on a blindfold and got on his knees so he would be at the level of the donkey, and then we turned him around a few times. He got dizzy and ended up pinning the tail on a nearby door, while we all laughed. Well, when it was Julian's turn, we put the blindfold on him, he got down on his knees, and he pinned the tail on the door, just like Daddy! Julian took in the totality of what we showed him, and applied everything, not being aware that kneeling and pinning the tail on the door were not a part of the game.

The impressions that the child absorbs come in **effortlessly** and **without fatigue**. The child is unaware of this process; it happens **unconsciously** with every interaction she has with the environment. Like the mind of the child, the camera also has to interact with the environment- it can't take any pictures if it remains forgotten in the drawer!

Other characteristics of the absorbent mind are that it is a **temporary** state and it is **universal**; it is the birthright of every child everywhere on the planet. All over the world, children follow the same patterns in the development of language and movement, regardless of the complexity of their native tongue, or particularities of their culture's movement. The child learns because he has seen and heard. Around the age of six, children everywhere are developing a layer of reasoning mind that covers their absorbent mind and becomes the way they will learn into adulthood.

But unlike the camera, the child takes in the **emotional content** associated with the experience not only the visual images. The child absorbs the relationships between people and things, all of the attitudes and prejudices, *even unstated feelings about himself*, and of his family and culture. The child cannot distinguish between those images and experiences that are helpful, and those that are harmful. He is **indiscriminant** and **without judgment**, and accepts everything that is in his environment with love and as truth. This is why we must be so very careful that everything we offer to this child is offered with love and knowledge. The child will absorb humiliation and pain into his soul with the same ease that he absorbs nurturing and support.

Dynamic Aspects of the Absorbent Mind

Nebulae

It is difficult to understand these processes in the child's mind. As much as we are learning about brain development and how the mind functions, much of these inner workings are as much a mystery today as they were in Montessori's time. Montessori used a combination of metaphor and terms from modern psychology of her day to try to explain the dynamic aspects of the absorbent mind. When you read Montessori you will come across these terms: "nebula," "horme," "mneme," and "engrams." Although these words are not currently part of the brain research lexicon, the ideas they represent are fascinating and remain the subject of contemporary research.⁵

Montessori began by describing the newborn's mind as like "nebulae." "Nebulae," a term used in astronomy, comes from the Latin word for cloud. A nebula is a cosmic cloud of dust and gasses that gather together like material and eventually form stars. Nebulae are considered the building blocks of the universe, and while we don't understand precisely how they function, they contain all of the elements from which stars and solar systems are built and they do follow specific laws of cosmic order.

Montessori compared the creative energies within the newborn's mind to nebulae in space. Although nebulae are as indistinct as a cloud, over time, they collect material from the environment and gradually form into something substantial. Montessori thought of the different human creative potentials as nebulae, distinct but also interconnected. The nebula for movement gathers material related to development and coordination of specialized movement. The nebula for language guides the child to absorb from his environment the sounds and structure of his mother tongue.

It is the nebula for language that focuses the child's interest to the sounds of human spoken language as distinct from all of the other sounds in the environment. The particular language itself is not pre-established, but the *tendency to create language* is a nebulous potential. Like the particles of matter collecting in a nebula, all aspects relating to language gather together in the child's unconscious. They amass to the point where the child gradually begins to understand the meaning of spoken language and then begins to utter his first words. (Montessori, *The Absorbent Mind*, "Nebulae," pp.81-82, Kalakshetra) Like a star or planet

⁵ See "Absorbent Mind Update" in the NAMTA Journal, Spring, 1993 by Annette Haines. Haines presents evidence from brain research that supports Montessori's idea that the child's brain is significantly different from an adult's brain.

forming from a cloud of cosmic dust, the structure of spoken language forms from a nebula of potential in the newborn's mind.

Referring back to our camera analogy, the nebulae can also be compared to the film in a camera. Camera film contains a special sensitivity to light, like the child has a special sensitivity towards language, and through interaction with the environment, experiences are taken from the environment and fixed on the film. (Montessori, London Lecture #5, p.18, 1946) The film is hidden away inside the camera, and cannot be exposed to light, just as the child's unconscious mind is hidden away and inaccessible.

The Horme

If the nebulae are like the gathering place for the creative energies, then what is the vital force that leads the child to seek out formative experience? To describe this vital force, Montessori borrowed the term, "**horme.**"⁶ Montessori used the word "horme" to describe the **vital force active within the child that guides his efforts towards their goal.** There is no adequate word to resemble this force in the conscious mind, but we are all familiar with this energy. What makes a sunflower turn its face towards the sun? What guides the tendril of a pea shoot to twine around a trellis to support itself? It is a mysterious force that guides towards life-affirming behaviors. Sometimes we think of this as the "will to live," and we recognize its absence in a condition in infants known as "failure to thrive."⁷ It is this life force that guides and stimulates the child's interest and activity, and when not thwarted, we see in children an irresistible "joy of life." (Montessori, *The Absorbent Mind*, "The Child's Conquest of Independence," p. 85, Kalakshetra)

The horme is stronger than simple adult will power. An adult can choose not to exercise, even though we know we ought to, but a baby cannot choose not to crawl, or practice pulling up. It is imperative. The horme drives the infant to move, raise his head, and roll over. This is not taught, it comes from within the child, from his life force to be active and create the human conquest of independent upright movement. This is the horme guiding the nebulae for development of movement.

⁶ In *The Absorbent Mind*, Chapter 8, Montessori attributes the term "horme" to Sir Percy Nunn. In the footnote, she comments that it resembles the ideas of "élan vital" from Bergson, and Freud's "libido."

⁷ In the journal of the American Academy of Family Physicians, September 2003, "failure to thrive" is described as a condition often stemming from medical and social factors; either extreme of parenting, hypervigilance or neglect, can lead to this condition, which may result in malnutrition and developmental delays if not corrected.

The Mneme

It is during this unconscious construction, when the child “incarnates” the environment, that permanent, indelible memories become a part of him. Montessori borrowed another term from psychology when she called these fixed unconscious memories the “mneme.”⁸ The word “mneme” comes from the Greek goddess who was the muse of memory. All of the experiences that an individual has in life are retained in the mneme, but only a few trace experiences enter the conscious mind as memories. Just as an island does not float on the sea, but is built up from the bottom of the ocean, our conscious memories are the visible portion of the island, above the vast hidden mneme of our unconscious experiences.

Montessori gives the simple example of how the mneme works by suggesting that you memorize a string of nonsense syllables.⁹ After a few days, you will have forgotten the syllables, but you will be able to memorize them more quickly the second time because they were retained in the mneme. It is not the direct memory of the syllables that is retained, but traces of the experience. We all know that we have learned much more information than our conscious memory can retain, so it is not memory that makes intelligence. When we think of what we consider an “intelligent” person, it is not necessarily someone who remembers everything he ever learned in school, but who can quickly synthesis information because he has retained many of these “traces of experiences” in the mneme. (Montessori, *To Educate the Human Potential*, “The New Psychology of the Unconscious,” p.20, Kalakshetra)

Engrams

Montessori referred to these “traces of experience” as “**engrams**,” another term borrowed from psychology. Our subconscious is full of these engrams that assist with the association of ideas stored in our unconscious.¹⁰ Montessori gives an example of the mathematics student who goes to sleep with an unsolved problem and wakes up the solution.¹¹ These are engrams at

⁸ In *The Absorbent Mind*, Montessori attributes the word, “mneme,” first to a German biologist, Richard Semon, but indicates the concept was developed by Sir Percy Nunn, as well as concepts of “horme,” and “engrams” in his book, *Education, its Data and First Principles* (1920).

⁹ Montessori describes this experiment in *To Educate the Human Potential*, “The New Psychology of the Unconscious,” p.20, Kalakshetra.

¹⁰ Webster’s Medical Dictionary explains engrams as “An enduring change in the brain postulated to account for the persistence of memory. The term ‘engram’ was coined in 1908 to denote the permanent trace left in the brain by a remembered stimulus, the lasting latent memory engraved into the psyche.”

¹¹ Montessori, *To Educate the Human Potential*, “The New Psychology of the Unconscious,” p. 22.

work. Similarly, when something is “on the tip of your tongue,” and you suddenly remember it—those are engrams. When you are practicing a passage of music over and over and not getting it right, if you leave it for a while and come back to it, then all of sudden you can play it – that is the engrams at work, spontaneously organizing the intellect.

If we go back to our camera analogy, the functioning of engrams could be likened to “dark room time.” Engrams are responsible for the subconscious association of ideas that results in new ideas that we may not have been able to come up with consciously. Sometimes it helps to think of this function of engrams as related to inspiration or sudden insight. Inspiration comes from somewhere inside of you, but the sudden consciousness, the “ah ha moment,” we consider inspiration. (Montessori, *To Educate the Human Potential*, “The New Psychology of the Unconscious,” pp. 20-23, Kalakshetra)

In our work with children, we aid their intellectual growth because we make use of engrams. Our goal is not to help the child memorize facts or store knowledge in the conscious memory. Instead we try to give him continuous varied experiences that will increase his engrams, traces of experiences, and then to also give him time to “rest” and let the engrams work organizing these experiences. (Montessori, *To Educate the Human Potential*, “The New Psychology of the Unconscious,” pp. 20-23, Kalakshetra)

The Two Stages of the Absorbent Mind

We have said that through the creative power of the absorbent mind, the child constructs his intelligence and becomes completely adapted to his time and place. During the first plane of development, the absorbent mind operates in two different stages corresponding to the two sub-phases in the first plane, from birth to three, and from three to six. The first stage is that of “unconscious creation,” followed by the period of “conscious development.” We have also referred to these sub-stages in the four planes of development as “creation,” and “crystallization.”

Stage One: Unconscious Creation

From birth to around age three, the absorbent mind functions completely **unconsciously**. The child is unaware of this process, and this stage of the absorbent mind is inaccessible to adults. We can see little or nothing of its functioning, and yet, powerful forces are at work inside the little child’s mind. We have talked about the helplessness of the newborn, but the fact that the human baby is born before it is independent has to do with the significant portion of human growth and development that continues *after birth*, resulting from influence and interaction with the environment. From a biological, or perhaps a practical viewpoint, if the baby stayed in

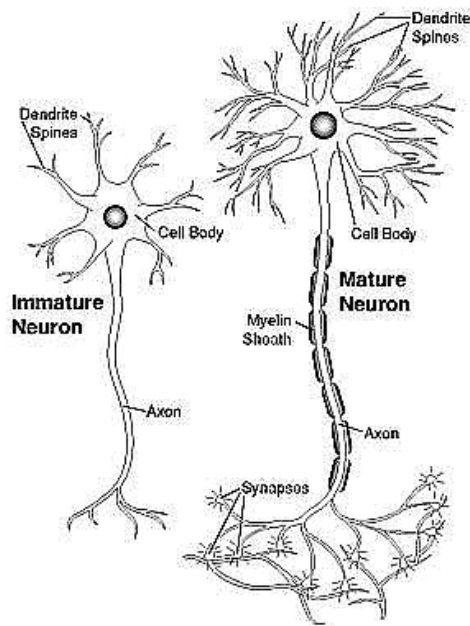
the womb any longer, it would be impossible for his head to pass through the birth canal. (Montanaro, *Understanding the Human Being*, “The Significance of the Newborn’s Helplessness,” p.23)

Montessori thought of these first formative years as a **continuation of the embryonic process**, or an “external pregnancy.”¹² During this time, the baby herself interacts with the environment to create the structures of her personality and intelligence. The physical organs of the body were created in the womb, when the fetus was a physical embryo, but after birth comes a second period of intense development that Montessori refers to as the “**psychic embryo**,” also referred to as the “spiritual embryo.” During this second embryonic period, the organs of the mind, the organizing principles that direct an individual’s behavior, are created. Because this creation happens as a result of interaction with the environment, the infant will become a person of that particular time, place, and culture. (M.M.Jr. *Education for Human Development*, p. 11, Schocken)

Current neuroscience is at the very early stages of understanding how the mind works, but what we are finding supports Montessori’s observations of adaptation and self-construction. The physical structures of the brain are being built with every experience the newborn has. It is important for us to have a basic understanding of how the “organs of the mind” are developed so that we can put the observations of Dr. Montessori into a contemporary context. This understanding gives validation to the past 100 years of Montessori theory and practice.

To give a simplified explanation of what is happening within the newborn’s brain, think of brain cells, or “neurons,” as small trees, or saplings. Neurons consist of cell bodies, axons and dendrites. Axons are long and extended, like the trunk and limbs of saplings, and make electrical connections, or synapses, with dendrites. Dendrites are like the root systems, from the Greek word for tree, “dendron.” In general, axons carry neural impulses away from cell bodies and dendrites carry impulses toward cell bodies. When information is transmitted from one neuron to another the electrical connection jumps the tiny gap from one neuron to another. The synapse, then, is the communication point between two cells. In order to expand the communication, the neurons have to expand their dendritic formations, or branching. To accommodate all of the new synapses, as much as 83% of total axonic and dendritic growth happens after birth. Inside the baby’s brain, those few small saplings are rapidly growing into a mature forest in which a single neuron may interact with thousands of other neurons. (Eliot, *What’s Going on in There?* pp. 23-27)

¹² Dr. Montanaro uses the term “external pregnancy,” and “exterogestation” in *Understanding the Human Being*, pp.21-22, to describe the nine months following birth as “a continuation and completion of the first internal pregnancy.”



As this forest is maturing in the baby's mind, the brain is creating, or "wiring" itself. The creation is the result of an intricate dance between nature and nurture. Genes direct the growth of the neurons, but the neurons themselves take over the connections and communications shaping themselves according to the experiences that come in from the senses. In the forest, trees that do not get enough light or nutrients die off. Similarly, infrequently used neural connections die off, and those connections that are repeated are strengthened. In this manner, the circuits of the child's brain are customized to her unique environmental experiences. (Eliot, *What's Going on in There?* p. 29) This is what Dr. Montessori described as the very young child constructing her intelligence and personality based on her experiences in the environment.

Anecdotally, when our children were very young, we always noticed how they seemed to "grow up" just a little bit more whenever we returned from some new experience, like going to Gramma's house and sleeping in a different environment, or on a hike in the woods where they saw and felt different things. The boys just seemed, in some way, to be a little different, a little more confident or independent. Were these new experiences, creating new synapses in their brains, shaping their personalities and constructing aspects of their intelligence?

Just as genes, hormones, and external experiences influence how the embryo's physical organs develop, there are also internal influences that effect how the spiritual or psychic embryo develops. The little child is guided by special "sensitivities" that direct his attention. For example, the newborn's hearing is well developed at birth and he is especially sensitive, or

attuned, to the sound of the human voice, particularly that of his mother. This sensitivity helps him unconsciously gather relevant experiences that gradually coalesce into the mental construction that is spoken language.

Although the tiny baby appears mentally inert, the absorbent mind is working, taking from the environment that which will form his intelligence. Montessori writes, ***“He is an embryo in whom exists nothing but nebulae which have the power to develop spontaneously certainly, but only at the expense of the environment- an environment rich in different forms of civilization.”*** (Montessori, *The Formation of Man*, “The Spiritual Embryo,” p. 69, Kalakshetra) In order to advance human civilization, the baby must complete his psychic development after he is born, so that from the *existing* environment that he is born into, he *begins* his journey.

The child passes through stages of unconscious creation, gradually moving towards conscious expression in every aspect of his development. The gradual emergence of consciousness can be compared to how corals construct a reef. Under the sea, hidden from our view, corals are taking elements from the sea and building up immense reefs. This construction goes on for a long time, invisible to us, until one day, a tiny bit of an atoll, a coral reef island, appears out of the sea. Only the tip of the island is visible to us, but underneath is an enormous development representing years of life and growth. When a young child takes his first steps, or utters his first words, it is like the tip of the island. For months or years the necessary mental constructions have been building up in his unconscious mind, hidden from our view, until the manifestation of the structure reveals itself to us in the form of a spoken word, or a toddling step. Although these first words are the beginning of conscious expression and indications of memory, they are not the beginnings of intelligence or the mental abilities; they are the product of the unconscious absorbent mind, working since birth.

Montessori writes, ***“From an unconscious being, intelligence comes little by little, like the gradual rising of the sun.”*** (Montessori, London Lecture #6, p. 21, 1946) This internal, unconscious work must take place, before conscious expression. That is why we must be consider carefully what we offer the child in his environment, for the child, like the corals under the sea, will construct his intelligence and his personality from what he finds in his environment. ***“It is a mental chemistry that takes place in the child, producing a chemical transformation. These impressions not only penetrate the mind of the child, but they form it; they become incarnated, for the child makes his own “mental flesh” in using the things that are in his environment.”*** (Montessori, *Education for a New World*, pp. 16-17)

Stage Two: Conscious Worker

Around the age of three, we begin to see the emergence of “islands” of consciousness, or “points of consciousness” indicating the beginnings of memory and conscious awareness. This is the second half of the first plane of development, the period we have referred to as “crystallization.” Now the function of the absorbent mind gradually shifts from creation and construction to the **development and unification of those creations**. With this increasing conscious awareness, the child is more directly **susceptible to adult influence**, and therefore we can more directly guide his experiences.

During the first three years, the child created language, coordinated movements, and the sense of self indicated by the beginnings of will and independence. Now, around the age of three the child seeks to develop the powers he has been creating. He consciously tackles his environment; it is if **“having absorbed the world by an unconscious kind of intelligence, now ‘lays his hand’ to it.”** (Montessori, *The Absorbent Mind*, p. 166, Kalakshetra) During the second stage of the absorbent mind, the child consciously works at perfecting, refining, and integrating the acquisitions already made, and we gradually begin to see independence, conscious will and memory emerge.

While the child’s mind still absorbs effortlessly and unconsciously through the senses, now the intelligence directs the hand to unify all of the elements of his personality. It is not enough to observe, the child must work and be active. He is irresistibly drawn to touch and handle everything. This was the period of time we called our younger son “Little Busy Fingers,” because he was so happy when he was busy doing something with his hands. Montessori called the hand the **“organ of the mind,”** because through the hand, the child’s mind is able to grasp the world. It is work with the hands that fulfills the two tendencies of the absorbent mind to **“extend the consciousness by activities performed on the environment,”** and to **“perfect and enrich those powers already formed.”** Montessori called the period of development between three and six years of age the time of **“constructive perfectionment.”** (Montessori, *The Absorbent Mind*, pp. 166-167, Kalakshetra)

When children are given the means to be active, not merely with toys to play with, but child-sized tools and materials so that they can participate in the real life they see around them, their whole character changes. They begin to show a strong desire to be **independent** and do things by themselves, without any adult help. They want to become masters of their own minds, bodies, and environment. (Montessori, *Education for a New World*, p. 65, Kalakshetra) The adult who gives unnecessary help, or creates dependency becomes an obstacle to the child who is following his inner guide to become functionally independent.

With the dawning of consciousness comes the **development of will**. The child becomes conscious, or aware of his work, as he willingly and willfully exercises the power to carry out certain actions. The development of will is a lengthy process and depends on conscious interaction with the environment. As the child makes choices and has the ability to act on those choices, the will is gradually strengthened. This is the interdependence of freedom, independence, and will. When a child is able to joyfully and freely organize and develop her own will, then she can enter into the society of others and form a cohesive social unit governed by free will. (Montessori, *Education for a New World*, “The Bugbear of Discipline,” pp. 82-85, Kalakshetra)

The second stage of the absorbent mind is also the optimal time to **correct any difficulties**, inaccurate constructions, or previous negative experiences. If a child has been injured, ill, or suffered negative influences in his first three years, he will carry those experiences with him into the next stage of development. However, with the growing consciousness of the period from three to six, we have the chance to help the child correct those “gaps” through constructive work with the materials. If these deviations are not corrected, not only do they remain, they get worse, and will negatively impact the child’s development at the second plane, the elementary years. (Montessori, *The Absorbent Mind*, “Character and its Defects,” pp. 194-5, Kalakshetra)

This process of developing independence, will, and the integration of mind and body leads to the **formation of character**. When all of these energies are united and can function in their natural rhythms, the child can develop in a normal, natural, and happy manner; a state of being that Montessori called the “**normalized child**.”

Montessori summarizes the workings of the absorbent mind in the following: ***“It seems, therefore, ‘natural to man’ that the child should begin by absorbing the environment and accomplish his development by means of work, of gradual experiences in his surroundings. He nourishes and develops his human qualities first by this unconscious absorption and then by his activities directed to outward things. He constructs himself, he forms his characteristics by nourishing his spirit.”*** (Montessori, *The Formation of Man*, “The Nebulae,” p. 81, Kalakshetra)

Implications for Education

When we recognize that the child has a mind so very different from our own, and begin to understand how the child’s mind develops and the hidden powers that guide that development, we begin to see that our work as educators is not to “teach,” but to collaborate with nature, and provide the conditions that will bring to light the very best in each child.

Montessori writes, ***“the first thing his education demands is the provision of an environment in which he can develop the powers given him by nature...we have to adjust our minds to doing a work of collaboration with nature ...development comes from environmental experience.”*** (Montessori, *The Absorbent Mind*, “The Child’s Conquest of Independence,” p. 91, Kalakshetra)

Within every child, Montessori saw the power of the absorbent mind to create a beautiful, peaceful world, united in love and knowledge, and free from prejudice. Our work is to guide and support what nature has designed; to recognize the “great truth,” that the child is the “light of immense significance for all of humanity.” In the conclusion of a lecture in London in 1946, Montessori emphasized to her students, ***“We must realize the truth of our new mission. This is what I want to impress on you, do not transmit knowledge, but take care of this life, which has the possibility of bettering all life. It is a great thing to do, yet so simple.”*** (Montessori, Lecture #4, p. 16, London, 1946) This remains our challenge today, to recognize, appreciate, and understand the inner life of the child, and to take care of this life.

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